

May 4 - 6, 1989

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## Embryonic Origins of Defective Heart Development

### Chairpersons:

Dale E. Bockman, Ph.D.  
Medical College of Georgia

Margaret L. Kirby, Ph.D.  
Medical College of Georgia

Key Bridge Marriott Hotel  
Alexandria, Virginia

### Conference Theme:

Many defects of the heart and great vessels originate during an early embryonic period. This conference will allow a synthesis of current knowledge by bringing together investigators who approach the questions concerning cardiovascular development from different perspectives. The latest insights into development of specific regions of the heart, outflow tract, and vessels will be presented along with hemodynamics and neural control. The importance of extracellular matrix and cell-cell interactions will be presented. Membrane and control phenomena, including the role of membrane channels, will be integrated with the molecular biology of cardiovascular components and with angiogenesis. Normal development will be contrasted with cardiovascular dysmorphogenesis, highlighting recent advances using new models of cardiac malformation.

Thursday, May 4, 1989

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Chairpersons:

*Dale E. Bockman, Ph.D.*  
*Margaret L. Kirby, Ph.D.*  
*Medical College of Georgia*  
*Augusta, GA*

8:00 AM - 8:50 AM Registration

9:00 AM - 9:05 AM  
Goals and plan of the conference  
*Dale E. Bockman, Ph.D.*

9:05 AM - 9:30 AM  
Overview of problems and approaches in heart development  
*Margaret L. Kirby, Ph.D.*

9:30 AM - 12:20 PM  
Session I: Normal and Defective Development of the Heart and  
Related Structures

Session Chairs:  
*Atsuyoshi Takao, M.D.*  
*L. H. S. Van Mierop, M.D.*

9:30 AM - 9:40 AM  
1. Introduction to congenital heart disease  
*L. H. S. Van Mierop, M.D.*  
*University of Florida, Gainesville, FL*

9:40 AM - 9:55 AM  
2. Inductive interactions in heart development: Role of adherons  
*Roger R. Markwald, Ph.D.*  
*Medical College of Wisconsin, Milwaukee, WI*

9:55 AM - 10:05 AM Discussion

10:05 AM - 10:20 AM  
3. Development of the outflow tract  
*Jose M. Icardo, M.D.*  
*University of Cantabria, Santander, Spain*

10:20 AM - 10:30 AM Discussion

10:30 AM - 11:00 AM Coffee Break

11:00 AM - 11:15 AM

4. Hemodynamics of the developing cardiovascular system

*Edward B. Clark, M.D.*

*University of Rochester, Rochester, NY*

11:15 AM - 11:25 AM Discussion

11:25 AM - 11:40 AM

5. Role of mechanical stimulation in cardiac development

*Louis Terracio, Ph.D.*

*University of South Carolina, Columbia, SC*

11:40 AM - 11:50 AM Discussion

11:50 AM - 12:20 PM

6. Summary remarks and general discussion

*Atsuyoshi Takao, M.D.*

*The Heart Institute of Japan, Tokyo, Japan*

and

*L. H. S. Van Mierop, M.D.*

*University of Florida, Gainesville, FL*

12:20 PM - 2:00 PM Conference Luncheon

2:00 PM - 5:00 PM

Session II: Cell-cell Interactions and Extracellular Matrix

Session chairs:

*Hynda K. Kleinman, Ph.D.*

*Fiona M. Funderburg, Ph.D.*

2:00 PM - 2:15 PM

7. Role of basement membrane in development

*Hynda K. Kleinman*

*NIDR, National Institutes of Health, Bethesda, MD*

2:15 PM - 2:25 PM Discussion

2:25 PM - 2:40 PM

8. Cell adhesion molecules in heart development

*Stanley Hoffman, Ph.D.*

*The Rockefeller University, New York, NY*

2:40 PM - 2:50 PM Discussion

2:50 PM - 3:05 PM

9. Role of the extracellular matrix in the post-septation development of the heart

*Thomas K. Borg, Ph.D.*

*University of South Carolina, Columbia, SC*

3:05 PM - 3:15 PM Discussion

3:15 PM - 3:45 PM Coffee Break

3:45 PM - 4:00 PM

10. Cell-cell and cell-matrix communication

*Richard D. Veenstra, Ph.D.*

*State University of New York, Syracuse, NY*

4:00 PM - 4:10 PM Discussion

4:10 PM - 4:25 PM

11. Elastogenesis in the developing cardiovascular system

*Thomas H. Rosenquist, Ph.D.*

*Medical College of Georgia, Augusta, GA*

4:25 PM - 4:35 PM Discussion

4:35 PM - 5:00 PM

12. Summary Remarks and General Discussion

*Hynda K. Kleinman, Ph.D.*

*NIDR, National Institutes of Health, Bethesda, MD*

*and*

*Fiona M. Funderburg, Ph.D.*

*Medical College of Wisconsin, Milwaukee, WI*

8:00 PM - 10:00 PM POSTER SESSION

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Friday, May 5, 1989

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9:00 AM - 12:00 NOON

Session III: Membrane and Control Phenomena

Session Chairs:

*Jonas B. Galper, M.D. Ph.D.*

*Achilles J. Pappano, Ph.D.*

9:00 AM - 9:15 AM

13. Development of neural regulation during cardiogenesis *in oculo*

*Diane C. Tucker, Ph.D.*

*University of Alabama, Birmingham, AL*

9:15 AM - 9:25 AM Discussion

9:25 AM - 9:40 AM

14. Development of autonomic neural effector transmission to the heart

*Achilles J. Pappano, Ph.D.*

*University of Connecticut Health Center, Farmington, CT*

9:40 AM - 9:50 AM Discussion

9:50 AM - 10:05 AM

15. The physiologic expression of alpha-adrenergic receptor development

*Michael R. Rosen, M.D.*

*Columbia University, New York, NY*

10:05 AM - 10:15 AM Discussion

10:15 AM - 10:45 AM Coffee Break

10:45 AM - 11:00 AM

16. Receptors and G protein in development of the embryonic chick

*Jonas B. Galper, M.D., Ph.D.*

*Harvard Medical School, Boston, MA*

11:00 AM - 11:10 AM Discussion

11:10 AM - 11:25 AM

17. Regulation of cardiac muscarinic receptors by phosphorylation

*M. Marlene Hosey, Ph.D.*

*The Chicago Medical School, Chicago, IL*

11:25 AM - 11:35 AM Discussion

11:35 AM - 12:00 NOON

18. Summary remarks and general discussion

*Jonas B. Galper, M.D., Ph.D.*

*Harvard Medical School, Boston, MA*

*and*

*Achilles J. Pappano, Ph.D.*

*University of Connecticut Health Center, Farmington, CT*

12:00 NOON - 2:00 PM Conference Luncheon

2:00 PM - 5:30 PM

Session IV: Membrane Channels

Session Chairs:

*Robert L. DeHaan, Ph.D.*

*Neil M. Nathanson, Ph.D.*

2:00 PM - 2:15 PM

19. Development of gap junctions

*Robert L. DeHaan, Ph.D.*

*Emory University Health Science Center, Atlanta, GA*

2:15 PM - 2:25 PM Discussion

2:25 PM - 2:40 PM

20. Potassium channels and repolarization

*Louis J. DeFelice, Ph.D.*

*Emory University Health Science Center, Atlanta, GA*

2:40 PM - 2:50 PM Discussion

2:50 PM - 3:05 PM

21. Regulation of muscarinic receptor and G-protein expression during cardiac development.

*Neil M. Nathanson, Ph.D.*

*University of Washington, Seattle, WA*

3:05 PM - 3:15 PM Discussion

3:15 PM - 3:45 PM Coffee Break

3:45 PM - 4:00 PM

22. Na<sup>+</sup> transport systems in embryonic heart cells: Properties and development

*Christian Frelin, Ph.D.*

*Centre de Biochimie du CNRS, Universite de Nice, France*

4:00 PM - 4:10 PM Discussion

4:10 PM - 4:25 PM

23. Sodium pump and sodium/calcium exchange

*W. Jonathan Lederer, M.D., Ph.D.*

*University of Maryland, Baltimore, MD*

4:25 PM - 4:35 PM Discussion

4:35 PM - 4:50 PM

24. Normal and altered development of membrane currents in the embryonic heart

*Tony L. Creazzo, Ph.D.*

*Medical College of Georgia, Augusta, GA*

4:50 PM - 5:00 PM Discussion

5:00 PM - 5:30 PM

25. Summary remarks and general discussion

*Robert L. DeHaan, Ph.D.*

*Emory University Health Science Center, Atlanta, GA*

*and*

*Neil M. Nathanson, Ph.D.*

*University of Washington, Seattle, WA*

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Saturday, May 6, 1989

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9:00 AM - 12:30 PM

Session V: Molecular Biology, Contractile Proteins, Angiogenesis

Session Chairs:

*Radovan Zak, Ph.D.*

*Drew M. Noden, Ph.D.*

9:00 AM - 9:15 AM

26. Control of myosin and actin expression in the heart

*Radovan Zak, Ph.D.*

*University of Chicago, Chicago, IL*

9:15 AM - 9:25 AM Discussion

9:25 AM - 9:40 AM

27. Precocious expression of neurofilament-associated genes during neural crest development

*Gary S. Ciment, Ph.D.*

*Oregon Health Sciences University, Portland, OR*

9:40 AM - 9:50 AM Discussion

9:50 AM - 10:05 AM

28. Protein phosphorylation/dephosphorylation systems in developing chick heart

*Robert W. Wrenn, Ph.D.*

*Medical College of Georgia, Augusta, GA*

10:05 AM - 10:15 AM Discussion

10:15 AM - 10:45 AM Coffee Break

10:45 AM - 11:00 AM

29. Origins and patterning of craniofacial and cardiac blood vessels

*Drew M. Noden, Ph.D.*

*Cornell University, Ithaca, NY*

11:00 AM - 11:10 AM Discussion

11:10 AM - 11:25 AM

30. Cardiac metabolism during development

*Joanne S. Ingwall, Ph.D.*

*Harvard Medical School, Boston, MA*

11:25 AM - 11:35 AM Discussion

11:35 AM - 11:50 AM

31. Migration in early embryonic development

*Jean-Loup Duband, Ph.D.*

*CNRS and Ecole Normale Supérieure, Paris, France*

11:50 AM - 12:00 NOON Discussion

12:00 NOON - 12:30 PM

32. Summary remarks and general discussion

*Radovan Zak, Ph.D.*

*University of Chicago, Chicago, IL*

and

*Drew M. Noden, Ph.D.*

*Cornell University, Ithaca, NY*

12:30 PM - 2:00 PM Conference Luncheon



2:00 PM - 5:30 PM

Session VI: Experimentally Induced Developmental Defects

Session Chairs:

*Arthur Garson, Jr., M.D.*

*Constance Weinstein, Ph.D.*

2:00 PM - 2:15 PM

33. Cardiovascular defects associated with retinoic acid, alcohol, and other agents

*Roger N. Ruckman, M.D.*

*Children's Hospital National Medical Center, Washington, DC*

2:15 PM - 2:25 PM Discussion

2:25 PM - 2:40 PM

34. Alteration of cardiogenesis after neural crest ablation

*Margaret L. Kirby, Ph.D.*

*Medical College of Georgia, Augusta, GA*

2:40 PM - 2:50 PM Discussion

2:50 PM - 3:05 PM

35. Altered development of aortic arch arteries

*Dale E. Bockman, Ph.D.*

*Medical College of Georgia, Augusta, GA*

3:05 PM - 3:15 PM Discussion

3:15 PM - 3:45 PM Coffee Break

3:45 PM - 4:00 PM

36. Hemodynamic changes after neural crest ablation

*Linda Leatherbury, M.D.*

*Medical College of Georgia, Augusta, GA*

4:00 PM - 4:10 PM Discussion

4:10 PM - 4:25 PM

37. Blood flow patterns in the developing heart after neural crest ablation

*Makoto Nishibatake, M.D.*

*The Heart Institute of Japan, Tokyo, Japan*

4:25 PM - 4:35 PM Discussion

4:35 PM - 4:50 PM

38. Experimentally induced long Q-T syndrome in the chick embryo

*James L. Christiansen, M.D.*

*Texas Children's Hospital, Houston, TX*

4:50 PM - 5:00 PM Discussion

5:00 PM - 5:30 PM

39. Summary remarks and general discussion

*Arthur Garson, Jr., M.D.*

*Texas Children's Hospital, Houston, TX*

*and*

*Constance Weinstein, Ph.D.*

*National Heart, Lung, and Blood Institute, NIH, Bethesda, MD*